

We Claim:

1. A method for forming a multiple identity substrate material comprising the steps of:  
providing a first affinity sequence at multiple locations on a support;  
providing a functionalized second affinity sequence, which reacts with the first affinity sequence, and has an unhybridized overhang sequence; and  
selectively cross-linking first affinity sequences and second affinity sequences.
2. The method of claim 1, wherein the cross-linking is performed by UV irradiation of psoralen.
3. The method of claim 1, wherein at least one location on the support with the first affinity sequence is masked to prevent cross-linking of the first and second affinity sequences.
4. The method of claim 1, wherein the first affinity sequence is covalently attached to the support.
5. The method of claim 4, wherein the support is reacted with aminopropyltriethoxysilane (APS) reagent before the first affinity sequence is attached.
6. The method of claim 4, wherein the first affinity sequence is reacted to form a dialdehyde group at a terminal position of the first affinity sequence.
7. The method of claim 1, further comprising the steps of:  
dehybridizing the second affinity sequences that are not cross-linked;  
providing a functionalized third affinity sequence, which reacts with the second affinity sequence, and has an unhybridized overhang sequence; and  
selectively cross-linking the second and third affinity sequences.
8. The method of claim 8, wherein the cross-linking is performed by UV irradiation with psoralen.

9. The method of claim 7, wherein at least one location on the support is masked to prevent cross-linking of the second and third affinity sequences.

10. The method of claim 1, further comprising providing a fourth affinity sequence that hybridizes with the first affinity sequence and includes a fluorescent label.

11. The method of claim 1, further comprising providing a fifth affinity sequence that hybridizes with the second affinity sequence and includes a fluorescent label.

12. The method of claim 7, further comprising a sixth affinity sequence that hybridizes with the third affinity sequence and includes a fluorescent label